

# Nitrous oxide or 'nanging'

**Nitrous oxide (N<sub>2</sub>O) is a gas that has a range of industrial uses. Due to its analgesic and anaesthetic properties, it is also commonly used by health professionals to sedate patients undergoing minor medical procedures.**

First synthesized in 1772, it became known as 'laughing gas' due to its euphoric and relaxant properties and was used recreationally at parties for many years before its medical or industrial potential was realized.

The number of Australian school-based young people who have used the drug is not known, as nitrous oxide is listed under 'inhalants' in surveys examining student drug use. Anecdotal reports, however, suggest that increasing numbers of young people are using nitrous oxide, or 'nanging'. This refers to the small canisters or bulbs (or 'nangs') containing the gas that are emptied into balloons and then inhaled. The bulbs can be purchased from convenience stores and corner shops, catering outlets, websites and increasingly, particularly amongst older teens, through home delivery services via the internet.

It is a legal, cheap and easily accessible product that is also regarded as 'harmless' and 'safe'. It is true that in the vast majority of cases, inhaling the gas from balloons is unlikely to lead to adverse effects, however, there is always a risk.

**Nitrous oxide-related deaths are rare but they do happen. They are usually caused by 'misadventure' (e.g., intoxicated people having accidents or falls) but there have also been cases of death due to asphyxia (hypoxia).**

Teachers need to consider the following points around nitrous oxide or 'nanging' should the topic be raised in any classroom activities or discussions:

- **Nitrous oxide or 'nanging' is not 'safe' – all drug use, legal, illegal or pharmaceutical, involves some degree of risk**
- **Deaths are rare but they do happen**
- **Deaths are usually caused by 'misadventure'**
- **Other deaths have been caused by hypoxia or asphyxiation**
- **Just because nitrous oxide is given to patients by a doctor or dentist does not mean that it is 'safe'**

## Background

Nitrous oxide (N<sub>2</sub>O) is a colourless and tasteless gas that has a range of legitimate uses. The food industry uses it as a mixing and foaming agent for whipped cream, and the motor industry uses it as a fuel booster to help increase engine performance. Due to its analgesic and anaesthetic properties, it is commonly used by dentists and other medical professionals across Australia to sedate patients undergoing medical procedures, e.g., it is often used by women during labour.

Unlike many other drugs, nitrous oxide was used recreationally long before its medical or industrial potential was discovered. It was first synthesized by Joseph Priestly in 1772 and due to its euphoric and relaxant properties, the inhalation of the gas at high-society parties quickly became a popular parlour game. It is here that nitrous oxide became better known as 'laughing gas'.

Recent research suggests that the recreational use of nitrous oxide (or 'nanging' as it is often called, due to the bulbs containing the gas being known as 'nangs') is growing amongst young Australians, including school-based young people.

## Nitrous oxide and inhalants

Nitrous oxide is classified as an 'inhalant'. Inhalants can also be referred to as solvents or volatile substances. There are a variety of often easily obtained products and/or substances that can be misused by sniffing or inhaling the vapours or fumes resulting in the user experiencing euphoria or a 'high'.

Inhalants, including nitrous oxide, are depressant-type drugs – slowing down the central nervous system. When these substances are used the fumes enter the bloodstream quickly, with the desired effects felt after seconds. Unlike many other inhalants, nitrous oxide users rarely report any

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The information provided on this fact sheet is provided for information purposes only. As such it **cannot substitute for the advice of a medical professional**

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hangover effect, allowing them to resume normal activities shortly after use.

### The extent of use among young people

The number of school-based young people who have used nitrous oxide for non-medical reasons is not known, as the gas is grouped with other inhalants (e.g., glue, aerosols and petrol) in student surveys. According to the 2017 Australian Secondary Students' Alcohol and Drug (ASSAD) survey, 18% of 12-17-year-olds reported lifetime use of inhalants.

A recent survey of Australian ecstasy users found that the use of nitrous oxide amongst that sample had almost doubled in the past fifteen years (with 26% reporting they had used the drug in the past six months in 2003, compared to 50% in 2018).

### What form does nitrous oxide come in and how do young people access and use it?

Most young people who use nitrous oxide purchase the gas in small pressurized metal cannisters (bulbs/ whippets or 'nangs') designed for the food industry, typically for whipping cream. These bulbs should not be confused with those used to carbonate drinks as they contain carbon dioxide (CO<sub>2</sub>) and inhaling these can result in shortness of breath at best, and possible suffocation in extreme cases.

These bulbs are usually bought in boxes of 10 and cost around \$12. They can be purchased from convenience stores and corner shops across the country, catering outlets, websites and increasingly, particularly amongst older teens, through home delivery services via the internet.

A bulb contains 8-10g of pressurized nitrous oxide and this is typically released into balloons using either a puncturing device (a charger), or a whipped cream dispenser of some type. The user then inhales the gas from the balloon and almost immediately experiences the desired effect. This is known as 'nanging'. After the rapid onset, there is a peak of effect for around one minute after inhaling (lasting for about 20 seconds), ending after around two minutes. The person may then take many 'hits' over a few hours. Australian research has found that the number of bulbs typically inhaled in a heavy session is about 10, however, international studies of

heavy users have found they may take 75-125 bulbs per session to remain under the influence.

The balloon is used for safety reasons, as there are a number of dangers around inhaling nitrous oxide directly from the bulb. Firstly, the gas is intensely cold (-40C) and due to its anaesthetic effect, the user may initially be unaware of the damage being caused. There have been reports of frostbite of the mouth, nose, lips and vocal cords. Secondly, the gas leaves the bulb under great pressure and can cause ruptures in lung tissue if inhaled directly.

### Why do people use it?

Nitrous oxide is a legal, relatively cheap and readily available product. It is undetectable on a routine drug test and is regarded as a 'quality' product (i.e., unlike illicit drugs that are manufactured with little or no quality control what the user pays for is what they get). The effects are almost immediate, beginning within seconds of inhaling the gas, and users report no hangover effect after the intoxication period has ended.

Most importantly, it is regarded by many as a 'harmless' and completely 'safe'.

### Is nitrous oxide or 'nanging' safe? Are there potential risks?

Even when nitrous oxide is used in a controlled setting by health professionals, strict protocols are followed to ensure the patient's safety, ensuring that a controlled supply of oxygen is supplied at the same time so as to prevent hypoxia.

Those harms that have been linked to 'nanging' are usually linked to heavy and prolonged use. The most significant harm associated with this pattern of use is the depletion of vitamin B12, which can initially result in numbness in the fingers. If this is left untreated, long-term nerve damage can result. There have been deaths linked to nitrous oxide, most of which have been due to asphyxiation. This can be caused by trying to extend intoxication by exhaling and re-inhaling from balloons filled with nitrous oxide; inhaling the gas by putting a bag over the head; or opening a tank containing nitrous in an enclosed space such as a car.

Most importantly, in high doses, nitrous oxide becomes a dissociative anaesthetic, causing the user to become less aware of pain and the environment. Due to the lack of oxygen, they can

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become dizzy and disoriented leading to tripping, accidents and falls. There have been deaths as a result, and these are usually classified as ‘death by misadventure’.

In a 2017 television interview, the Director of the Poisons Information Centre at Westmead Hospital reported “a doubling of the number of calls from hospitals about significantly affected people from nitrous oxide exposure.” Deaths are rare but have been reported in Australia and “can relate to anything from the exploding of the small cylinders, to people becoming hypoxic – that is, short of oxygen, from overuse”.

As with any drug, legal, illegal or pharmaceutical, the use of nitrous oxide is not risk-free. It is important to acknowledge, however, that if a person has small infrequent doses, there is a low risk of significant problems associated with the use of this drug.

### Implications for health teachers

**Inhalant use is a difficult and controversial area to cover in a classroom setting. There has been a long-standing belief that providing information and education on this topic may inadvertently draw attention to the practice, as well as the range of readily accessible products that could potentially be used. As such, some Australian jurisdictions have adopted policies that education on this topic should not be offered to non-users in schools.**

Engaging students in drug education activities aims to assist them to make healthy and safe choices; identify risky situations and develop strategies to prepare them for challenging situations.

Most importantly, drug education is not the same as drug information provision. As such, it is not recommended that a lesson be delivered specifically about nitrous oxide and the practice of ‘nanging’. Instead, teachers are encouraged to use a ‘strength-based’ approach. In lessons where skill-development is the focus, health teachers can also help to improve knowledge and awareness on the risks associated with any drug, including nitrous oxide.

For example, if a teacher was aware that nitrous oxide was being used by students and ‘decision-making’ skills were being covered in a lesson, a scenario-based activity could be used to discuss the practice of ‘nanging’. What would they do if someone offered them nitrous oxide at a

party? What information would you need to make that decision? During classroom or small group discussions incorrect beliefs could be challenged and accurate and age-appropriate information provided as and if necessary. This will also provide a good opportunity to reinforce general first aid principles, such as the recovery position and knowing how to ask for help.

With that in mind, the following key messages regarding the use of nitrous oxide and ‘nanging’ may prove useful for teachers in their discussions with young people:

- **Nitrous oxide or ‘nanging’ is not safe – all drug use, legal, illegal or pharmaceutical, involves some degree of harm**
- **Deaths are rare but they do happen**
- **Deaths are usually caused by ‘misadventure’,** i.e., users become so intoxicated that they have an accident or fall and die as a result
- **Other deaths have been caused by hypoxia or asphyxiation,** i.e., the nitrous oxide had led the user’s body to be deprived of oxygen
- **Just because nitrous is given to patients by a doctor or dentist does not mean that it is safe** – when N<sub>2</sub>O is given to a patient by a health professional, it is delivered in a controlled manner ensuring an appropriate supply of oxygen is administered at the same time

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